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IS 1448-75 (1968): Methods of test for petroleum and its products, Part 75: Odour of liquefied petroleum gases [PCD 1: Methods of Measurement and Test for Petroleum, Petroleum Products and Lubricants]

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Indian Standard

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

[P : 75]

ODOUR OF LIQUEFIED PETROLEUM GASES

(Second Reprint MARCH 1985)

UDC 665·725 : 543·926

1. SCOPE

1.1 This method prescribes the procedure for the evaluation of the odour of liquefied petroleum gases (LPG).

2. OUTLINE OF THE METHOD

2.1 The sample is diluted with air to 20 percent of its lower explosive limit (LEL). The odour is assessed personally and recorded in terms of the degree of intensity.

3. APPARATUS

3.1 The apparatus (*see* Fig. 1) shall consist of the component parts as described in **3.1.1** to **3.1.4**.

3.1.1 *Air Purifying and Regulating System* — consisting of a suitable compressed air supply connected to:

a) *Needle valve A*;

b) *Bottle* — 250-ml, containing 98 percent sulphuric acid;

c) *Empty bottle* — 250-ml;

d) *Packed tower* — containing activated charcoal which is covered by a mat of glass wool to prevent carry-over of fine dust;

e) *Water manometer* — having a range of about 15 cm, connected to the air line by means of a T-piece; and

f) *Orifice* — with an internal diameter of 2 mm, so that a head of 10 cm on the manometer will be produced by a suitable flow of air.

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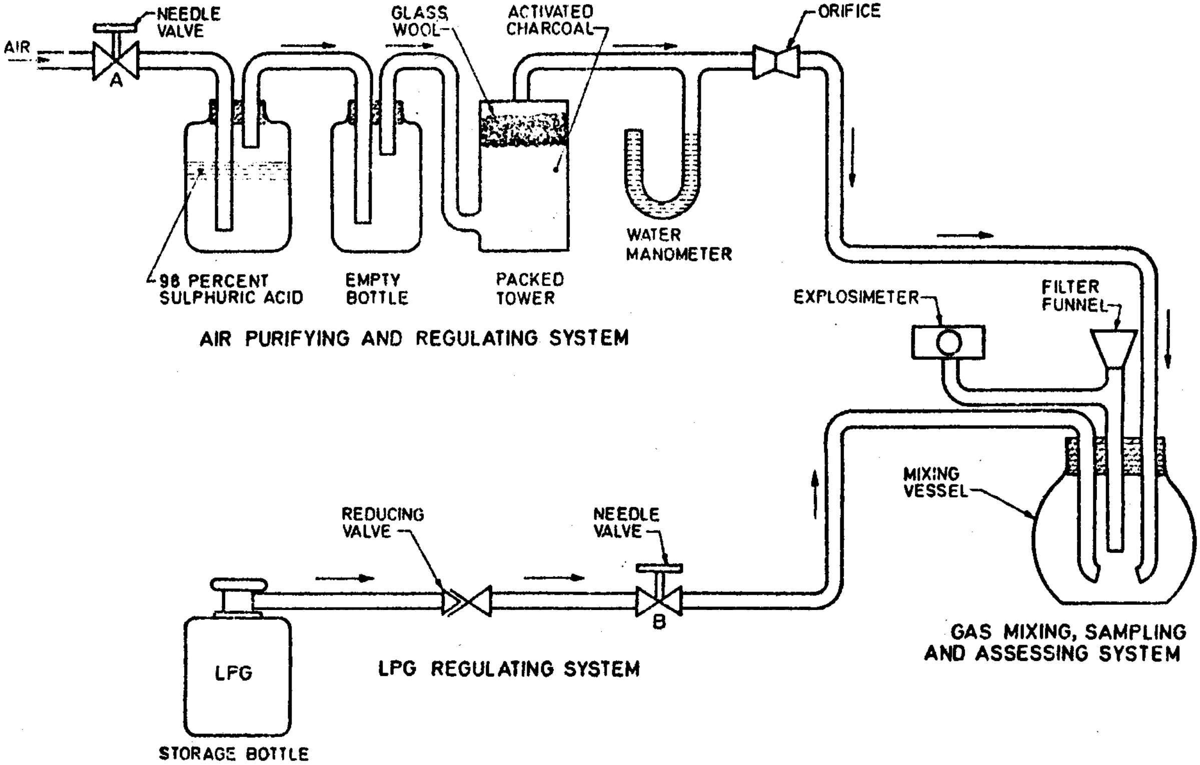

Fig. 1 Flow Scheme for Odour Test of LPG

3.1.2 *LPG Regulating System* — consisting of:

a) *Storage container or bomb* — containing the sample,

b) *Reducing valve* — capable of giving an outlet pressure of 0·035 kgf/cm, and

c) *Needle valve B*.

3.1.3 *Gas Mixing, Sampling and Assessing System* — consisting of:

a) *Mixing vessel* — 1 000 ml, wide-neck, fitted with a rubber bung carrying two glass tubes extending slightly below the centre of the flask and inclined inwards to impart a swirling motion to the incoming gases;

b) *Exit tube* — wide-bore (9 mm), passing upwards through the bung and connected to a filter funnel 10 cm in diameter, which is used as a nose-piece; and

c) *Capillary tube* — with a bore of 1 mm entering the side of the exit tube at a point just above the rubber bung.

3.1.4 *Explosimeter* — with a graduated scale calibrated to read in percentage of lower explosive limit.

3.1.4.1 The explosimeter shall be calibrated before use as recommended by the manufacturer.

NOTE — Wherever possible, all connections should be made by glass-to-glass joints, rubber connections being restricted to a minimum.

4. TEST CONDITIONS

4.1 Tests for the assessment of the odour level shall be carried out by three persons in a room free from pronounced odours. These persons shall spend at least 5 minutes in the open air before attempting an assessment and shall not take more than 3 breaths to determine the odour level.

5. PROCEDURE

5.1 Place the apparatus under a well-ventilated hood and connect the compressed air supply. With the needle valve *A* fully open, adjust the flow until a pressure head of about 15 cm is indicated on the manometer. Adjust the needle valve *A* to give a pressure head of 10 cm. Purge the apparatus with air for at least 5 minutes and, in any case, until no smell is detectable.

5.2 Connect the LPG sample container through the reducing valve to the apparatus. Close the gas control needle valve *B* and open the container valve fully.

5.3 Connect the explosimeter to the appropriate point and test to ensure that it reads zero when no LPG is entering the system. Testing continuously with the explosimeter, bring the concentration of LPG in the mixed gas stream up to 20 percent of LEL by manipulation of the gas control needle valve *C*. Do not make any alteration to the air supply. When stable conditions have been obtained, allow the apparatus to flush for 2 minutes.

5.4 Then let 3 observers enter in turn and inhale the mixture issuing from the filter funnel. Properly ventilate the hood between successive observations. Let the observers assess the odour levels with the help of the scale given below and record the average of the 3 observations :

Level	*Description*
0	No detectable odour
1	Very faint, but positively perceptible odour
2	Easily detectable odour

6. REPORTING

6.1 Report to the nearest whole number the average odour level.

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